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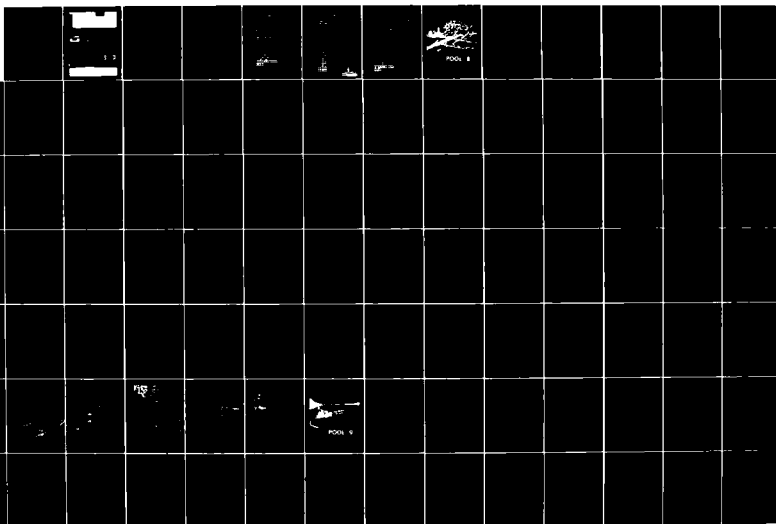
GREAT 1 STUDY OF THE UPPER MISSISSIPPI RIVER TECHNICAL
APPENDIXES VOLUME 8..(U) GREAT RIVER ENVIRONMENTAL
ACTION TEAM SEP 80

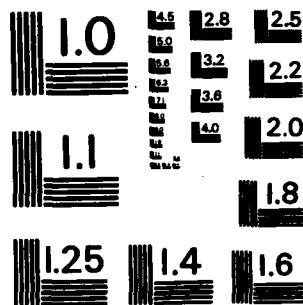
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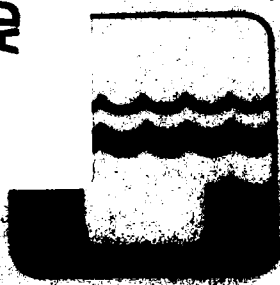


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VOLUME 8



CHANNEL MAINTENANCE
PART X - POOL PLANS AND SITE DESCRIPTIONS—
POOLS 8, 9, & 10

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) GREAT I STUDY OF THE UPPER MISSISSIPPI RIVER; Volume 8: Channel Maintenance		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s) Great Environmental Action Team		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army Corps of Engineers, St. Paul District 1135 USPO & Custom House, St. Paul, MN		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE September 1980
		13. NUMBER OF PAGES 1900
		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for Public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Volume 8 issues in 5 parts: Part I: narrative; Part II: Pool Plans and Site Descriptions-Minnesota River; St. Croix River, St Anthony Falls, and Pools 1 and 2; Part III: Pools 3 & 4; Part IV: Pools 5, 5A, 6 & 7; Part V: Pools 8, 9, and 10.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Channels (waterways) Mississippi River Dredged Material		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The channel maintenance plan is composed of a detailed dredged material placement plan (described in part I) and a set of supporting recommend- ations for dredging and channel maintenance. Parts II-V detail the channel maintenance plan by specific sites.		

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OUTLINE

GREAT I

SEPTEMBER 1980



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VOLUME 1 MAIN REPORT

TECHNICAL APPENDIXES

VOLUME 2 A. FLOODPLAIN MANAGEMENT

B. DREDGED MATERIAL USES

C. DREDGING REQUIREMENTS

VOLUME 3 D. MATERIAL AND EQUIPMENT NEEDS

E. COMMERCIAL TRANSPORTATION

VOLUME 4 F. WATER QUALITY

G. SEDIMENT AND EROSION

VOLUME 5 H. FISH AND WILDLIFE

VOLUME 6 I. RECREATION

VOLUME 7 J. PUBLIC PARTICIPATION

K. PLAN FORMULATION

VOLUME 8 L. CHANNEL MAINTENANCE

PART I - NARRATIVE

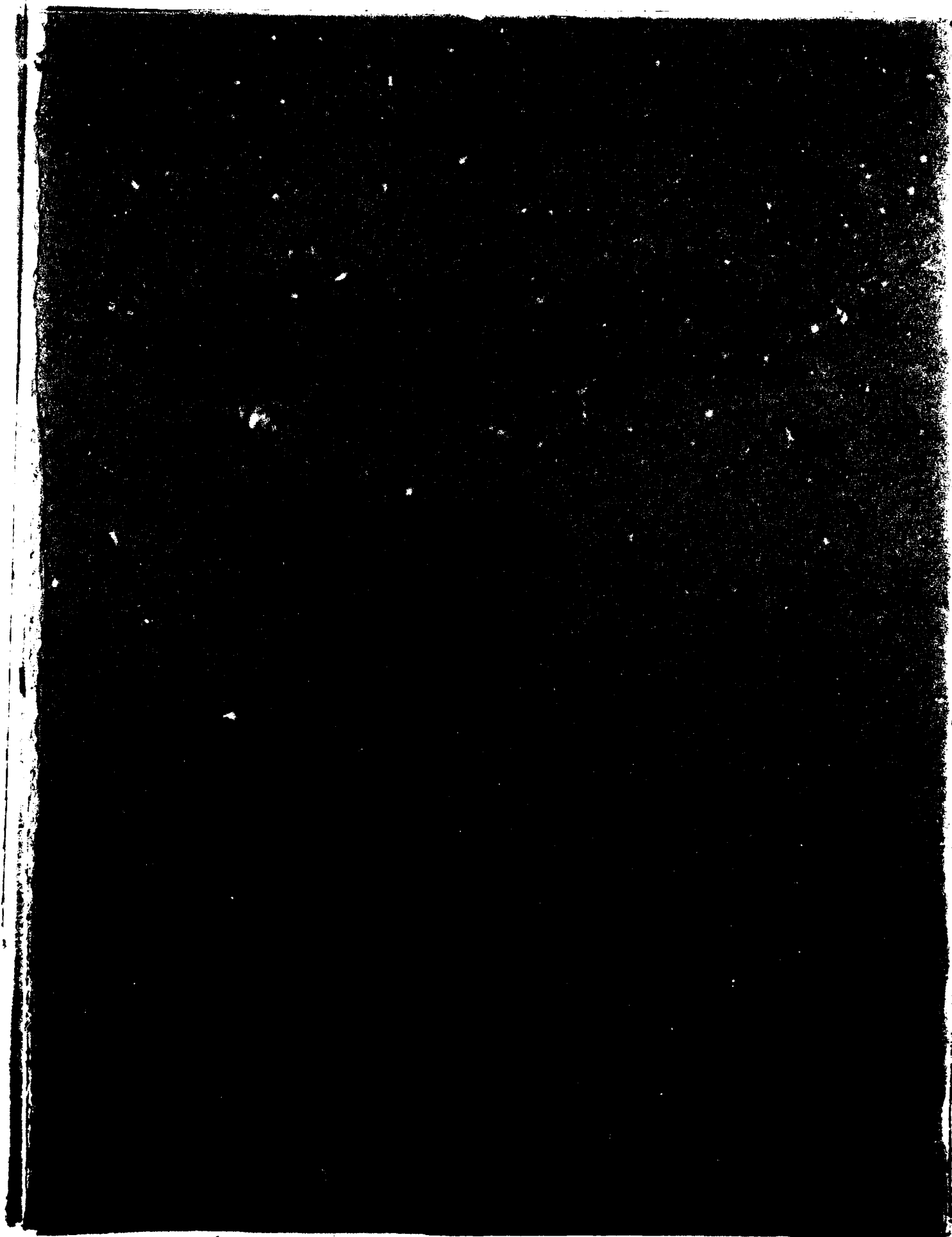
PART II - POOL PLANS AND SITE DESCRIPTIONS -
MINNESOTA RIVER, ST. CROIX RIVER,
ST. ANTHONY FALLS, AND POOLS 1 AND 2

PART III - POOL PLANS AND SITE DESCRIPTIONS -
POOLS 3 AND 4

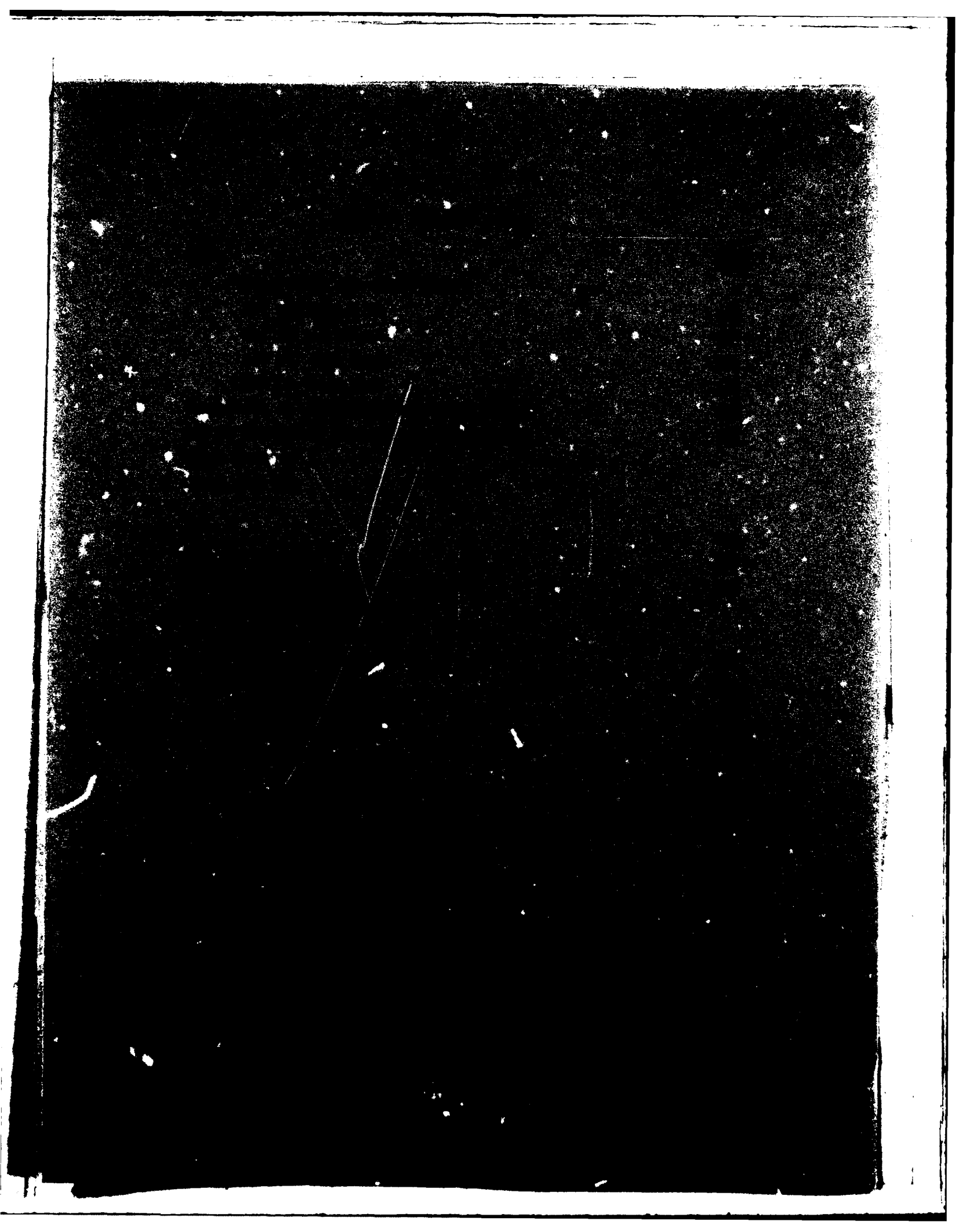
PART IV - POOL PLANS AND SITE DESCRIPTIONS -
POOLS 5, 5A, 6, AND 7

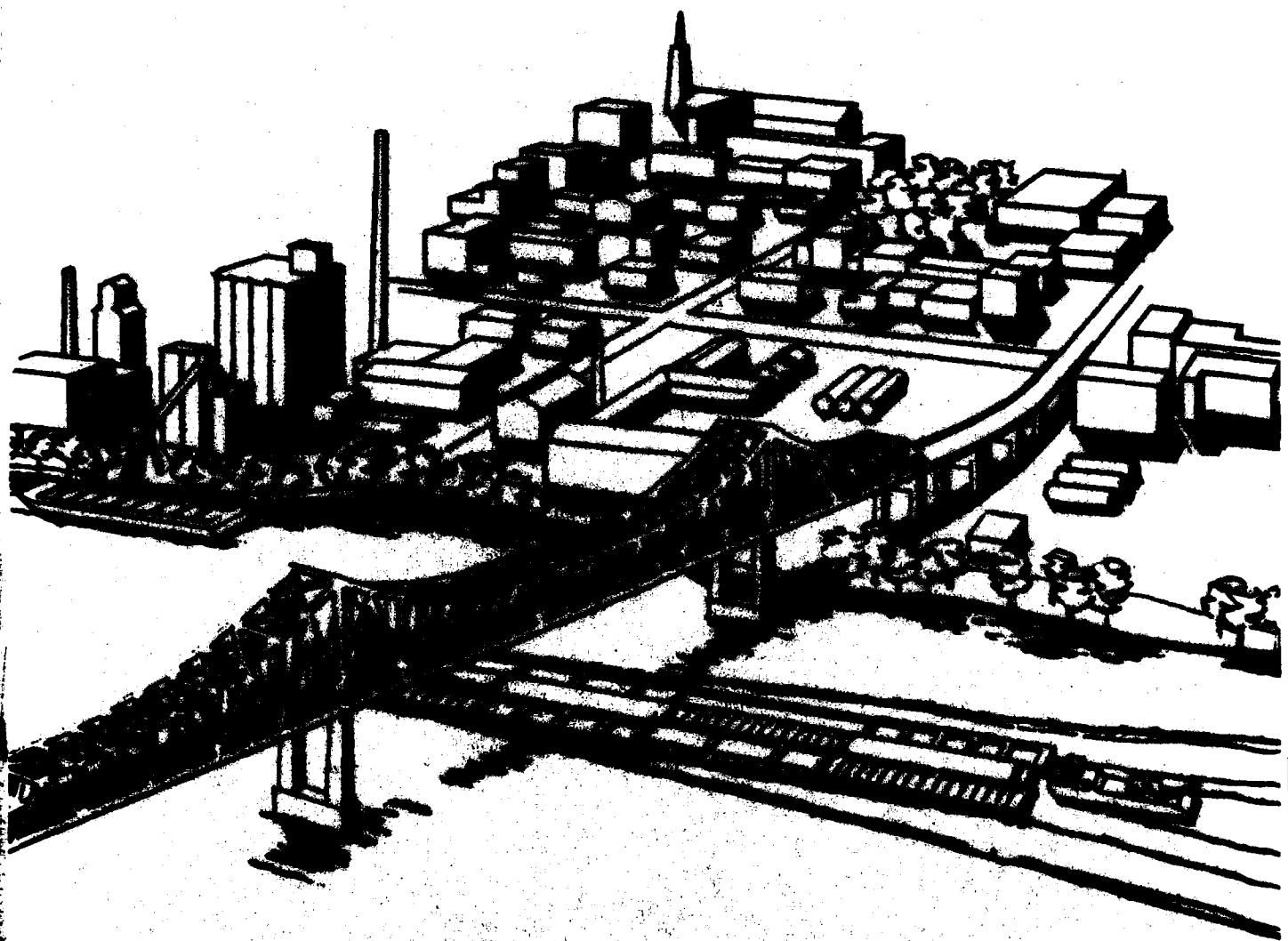
PART V - POOL PLANS AND SITE DESCRIPTIONS -
POOLS 8, 9, AND 10

VOLUME 9 M. ENVIRONMENTAL IMPACT STATEMENT









POOL 8

CHANNEL MAINTENANCE PLAN SUMMARY

POOL 8

Dredge Cut	MFTWOC CY @ 1985-0225	Selected Site	MEB Site	EQ Site	MTT Site	MFTWOC Site	MFTWOC CY @ 1985-2025	Temporary Site
1. Warner's Landing	41,500	8.22	8.31	8.06	8.22	8.31	44,500	-
2. Crosby Slough	45,500	8.22	8.01	8.06	8.22	8.01	52,500	-
3. Below Head of Raft Channel	239,000	8.30	8.20	8.06	8.22	8.20	262,500	-
4. Head of Raft Channel	1,018,000	8.30	8.02	8.30	8.22	8.02	1,118,000	-
5. Brownsville	654,500	8.30	8.30	8.06	8.06	8.02	716,000	-
6. Above Brownsville	904,500	8.06	8.17	8.06	8.06	8.17	1,104,500	8.17
7. Pinyon Island	211,000	8.06	8.06	8.06	8.06	8.16	229,000	-
8. Root River	113,500	8.06	8.06	8.06	8.06	8.27	124,000	-
9. Sand Slough	171,000	8.06	8.15/8.06	8.06	8.06	8.15	361,000	-
10. Above and Below LaCrosse R.R. Bridge	280,500	8.28/8.06	8.28/8.06	8.06	8.06	8.07	304,000	-
	3,678,500						4,318,000	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy) -	3,678,500
Beneficial Use (cy) Potential from Selected Sites -	3,629,500
Total Area (acres) -	107
No. of sites with:	
Recreation Enhancement	- 3
Cultural Resources Impacts	- 0
Wetlands Affected:	
Types 1, 2 (acres)	- 26
Types 3, 4, 5 (acres)	- 11

Table 2-
Pool 8 Dredging Volumes

Item	Cut 1			Cut 2			Cut 3			Cut 4			Cut 5		
	With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT		With GREAT	Without GREAT	
Cut Name	Warners Landing			Crosby Slough			Below Head of Raft Channel			Head of Raft Channel			Brownsville		
1955 - 1974 average annual dredging volume	1,600	1,600		1,800	1,800		9,300	9,300		39,700	39,700		25,500	25,500	
Bend width changes (percent)	--	--		--	--		--	--		--	--		--	--	
Adjusted average annual volume	1,600	1,600		1,800	1,800		9,300	9,300		39,700	39,700		25,500	25,500	
Change for 1986 - 2000 (percent)	-34	-19		-34	-19		-34	-19		-34	-19		-34	-19	
Adjusted average annual volume	1,100	1,300		1,200	1,500		6,100	7,500		26,200	32,200		16,800	20,700	
Total volume dredged, 1986 - 2000	16,500	19,500		18,000	22,500		91,500	112,500		393,000	483,000		252,000	310,500	
Change for 2001 - 2025 (percent)	-37	-36		-37	-36		-37	-36		-37	-36		-37	-36	
Adjusted average annual volume	1,000	1,000		1,100	1,200		5,900	6,000		25,000	25,400		16,100	16,300	
Total volume dredged, 2001 - 2025	25,000	25,000		27,500	30,000		147,500	150,000		625,000	635,000		402,500	407,500	
Total volume dredged, 1986 - 2025	41,500	44,500		45,500	52,500		239,000	262,500		1,018,000	1,118,000		654,500	718,000	
Frequency of dredging (percent)	5	5		5	5		15	15		50	50		55	55	
Expected number of dredging jobs (1986 - 2025)	2	2		2	2		6	6		20	20		22	22	
Average dredging volume per job	20,800	22,200		22,800	26,200		39,800	43,800		50,900	55,900		29,800	32,600	
Note: All volumes in Cubic Yards															

Table 2- (cont.)

Pool 8 Dredging Volumes

Ite.	Cut 6		Cut 7		Cut 8		Cut 9		Cut 10	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Man	Above Brownsville		Picayne Island		Root River		Sand Slough		Above and below LaCrosse R.R. Bridge	
1955 - 1974 average annual dredging volume	39,200	39,200	8,200	8,200	4,400	4,400	12,800	12,800	9,500	9,500
Bed width changes (percent)	-10	--	--	--	--	--	-48	--	--	--
Adjusted average annual volume	35,300	39,200	8,200	8,200	4,400	4,400	6,700	12,800	9,500	9,500
Change for 1986 - 2000 (percent)	-34	-19	-34	-19	-34	-19	-34	-19	-24 ⁽¹⁾	-9 ⁽¹⁾
Adjusted average annual volume	23,300	31,800	5,400	6,600	2,900	3,600	4,400	10,400	7,200	8,600
Total volume dredged, 1986 - 2000	349,500	477,000	81,000	99,000	43,500	54,000	66,000	156,000	108,000	129,000
Change for 2001 - 2025 (percent)	-37	-36	-37	-36	-37	-36	-37	-36	-27 ⁽¹⁾	-26 ⁽¹⁾
Adjusted average annual volume	22,200	25,100	5,200	5,200	2,800	2,800	4,200	8,200	6,900	7,000
Total volume dredged, 2001 - 2025	555,000	627,500	130,000	130,000	70,000	70,000	105,000	205,000	172,500	175,000
Total volume dredged, 1986 - 2025	904,500	1,104,500	211,000	229,000	113,500	124,000	171,000	361,000	280,500	304,000
Frequency of dredging (percent)	60	60	15	15	10	10	20	20	25	25
Expected number of dredging jobs (1986 - 2025)	24	24	6	6	4	4	8	8	10	10
Average dredging volume per job	37,700	46,000	35,200	38,200	28,400	31,000	21,400	45,100	28,000	30,400

(1) Cut in approach to rigid structure.

Note: All volumes in Cubic Yards

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 1
SITE: 8.22

EXISTING CONDITIONS DESCRIPTION

SITE: 8.22

Page 1 of 3

CUT LOCATION: 683.5 - 683.8 (Warner's Landing)

PLACEMENT SITE LOCATION: RM 685.5

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 640'
100-year flood: 639'
5-year flood: 633.25'
Flat pool: 630.35'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Less than 200 ft.
Wetland: 500 ft.
Residence: Less than 100 ft.
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Site is on agricultural land with road access.

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Upland game birds, furbearers, waterfowl feeding

Socioeconomic: Site is farmed field (Minimal agriculture land).

Adjacent land use: Agriculture, residential, rail line, navigation channel.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 1
SITE: 8.22

Page 2 of 3

SITE: 8.22

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 100,000
Area at base (acres): 4
Height (feet): 15
Length (feet): 450
Width (feet): 400
Side slope (ratio): N/A
Final elevation (feet): 640 with beneficial use

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 20,800
Beneficial use demand (cubic yards): 468,500
Beneficial Use by: Vernon County, Wis. DOT, Stoddard, Bergen Twp
Other cuts using sites: 2

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100% medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None - Site not prone to flood flows.
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 8
CUT: 1
SITE: 8.22

Page 3 of 3

SITE: 8.22

SPECIAL CONDITIONS FOR SITE USE: Avoid Known Cultural Resources

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	4	agricultural land
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Warner's Landing

POOL: 8

CUT: 1

SITE: 8.22

Frequency: 5%

/40 yrs

Volume per job: 20,800 cy

CHANNEL MAINTENANCE PLAN COSTS PER DREDGING JOB

	TYPES OF DRPAGES					
	PIPELINE 20 inch	MECHANICAL			Backhoe 350 H.P.	Clamshell 700 H.P.
		16 inch	12 inch	700 H.P.	350 H.P.	700 H.P.
Basic Dredging Operation	\$439,300*	\$243,000*	\$224,000*	\$ 97,000*	\$ 92,000*	\$109,000*
Berming Costs	9,000*	5,000*	6,000*	0	0	0
Diking Costs	8,000	7,000	4,000	0	0	0
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Constnuction	0	0	0	0	0	0
Land Acquisition	76,000	76,000	76,000	76,000	76,000	76,000
Total of GREAT recommended Actions	448,000	248,000	230,000	97,000	92,000	109,000
Average Annual Costs	22,400	12,400	11,500	4,900	4,600	5,500

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 2
SITE: 8.22

EXISTING CONDITIONS DESCRIPTION

SITE: 8.22

Page 1 of 3

CUT LOCATION: 684.7 - 685.2 (Crosby Slough)

PLACEMENT SITE LOCATION: RM 685.5

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 640'
100-year flood: 639'
5-year flood: 633.25'
Flat pool: 630.35'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Less than 200 ft.
Wetland: 500 ft.
Residence: Less than 100 ft.
Beneficial Use Site: 0'
Other: None

VEGETATION CHARACTER: Site is on agricultural land with road access.

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Upland game birds, furbearers, waterfowl feeding.
Socioeconomic: Site is farmed field (minimal agriculture land).
Adjacent land use: Residential, rail line, navigation channel.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 2
SITE: 8.22

Page 2 of 3

SITE: 8.22

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 100,000
Area at base (acres): 4
Height (feet): 15
Length (feet): 450
Width (feet): 400
Side slope (ratio): N/A
Final elevation (feet): 640 with beneficial use

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 22,800
Beneficial use demand (cubic yards): 468,500
Beneficial Use by: Vernon County, Wis. DOT, Stoddard, Bergen Twp
Other cuts using sites: 1

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 medium to fine sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None - Site not prone to flood flows.
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 2
SITE: 8.22

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

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SITE: 8.22

SPECIAL CONDITIONS FOR SITE USE: Avoid known Cultural Resources

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	4	
Endangered Species habitat lost:	0	Agricultural land
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Crosby Slough
POOL: 8
CUT: 2
SITE: 8.22

Frequency: 5% /40 yrs
Volume per job: 22,800 cy

	TYPES OF DREDGES					
	PIPELINE 20 inch	16 inch	12 inch	MECHANICAL		
				Backhoe 350 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$172,000*	\$215,000*	\$258,000*	\$ 90,000*	\$ 97,000*	\$117,000* \$113,000*
Berming Costs	5,000*	8,000*	10,000*	0	0	0
Diking Costs	7,000	6,000	5,000	0	0	0
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	76,000	76,000	76,000	76,000	76,000	76,000
Total of GREAT recommended Actions	177,000	223,000	268,000	90,000	97,000	117,000 113,000
Average Annual Costs	8,900	11,200	13,400	4,500	4,900	5,900 5,700

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 3
SITE: 8.30

EXISTING CONDITIONS DESCRIPTION

SITE: 8.30

Page 1 of 3

CUT LOCATION: 686.6 - 687.5 (Below Head of Raft Channel)

PLACEMENT SITE LOCATION: RM 688.5

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 665'
100-year flood: 639.25'
5-year flood: 634'
Flat pool: 630.55'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Partially

SITE CHARACTER:

% Upland: 40
% Wetland: 60
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Adjacent
Residence: Less than 200 ft.
Beneficial Use Site: 0'
Other: Side channels & wing dams immediately downstream.

VEGETATION CHARACTER:

SITE OWNER: FWS (leased to Houston Co., and sub-leased to private parties)

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Known waterfowl nesting and feeding area, furbearers,
fish spawning
Socioeconomic: Site of Sandbar Marina, some camping on upstream area/
recreation use.
Adjacent land use: Navigation channel, railroad, state highway.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 3
SITE: 8.30

Page 2 of 3

SITE: 8.30

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	2,500,000
Area at base (acres):	55
Height (feet):	30
Length (feet):	1,900
Width (feet):	1,250
Side slope (ratio):	4:1
Final elevation (feet):	695

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40
Volume dredged per job (cubic yards): 39,800
Beneficial use demand (cubic yards): 645,000
Beneficial Use by: MN DOT, Houston County, Hokah Township, Brownsville
Other cuts using sites: 4, 5

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95
Silt (%): 5
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): Yes

EROSION CONTROL NEEDED:

Riprap: Yes
Revegetation: None
Other: None
Areas and features protected by erosion control: Downstream wing dams, riprap, and backwaters.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 8
CUT: 3
SITE: 8.30

Page 3 of 3

SITE: 8.30

SPECIAL CONDITIONS FOR SITE USE: Riprapping banks and periodic beneficial use removal necessary to make site acceptable.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	11	III & IV
	22	1
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	22	Existing Placement site
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Below Head of Raft Channel
POOL: 8
CUT: 3
SITE: 8.30

Frequency: 15%
 /40 yrs
 Volume per job: 39,000 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$381,000*	\$405,000*	\$393,000*	\$174,000*	\$167,000*	\$199,000	\$215,000*
Berming Costs	7,000*	8,000*	10,000*	0	0	0	0
Diking Costs	8,000	7,000	7,000	0	0	0	0
Riprapping Costs	39,000*	39,000*	39,000*	39,000*	39,000*	39,000*	39,000*
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	427,000	452,000	442,000	213,000	206,000	238,000	254,000
Average Annual Costs	64,100	67,800	32,000	32,000	30,900	35,700	38,100

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 4
SITE: 8.30

EXISTING CONDITIONS DESCRIPTION

SITE: 8.30

Page 1 of 3

CUT LOCATION: 687.5 - 688.6 (Head of Raft Channel)

PLACEMENT SITE LOCATION: RM 688.5

TYPE OF PLACEMENT SITE: Permanent x Temporary

ELEVATIONS AT SITE:

Site (1980): 665'
100-year flood: 639.25'
5-year flood: 634'
Flat pool: 630.55'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Partially

SITE CHARACTER:

% Upland: 40
% Wetland: 60
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Adjacent
Residence: Less than 200 ft.
Beneficial Use Site: 0'
Other: Side channels & wing dams immediately downstream.

VEGETATION CHARACTER:

SITE OWNER: FWS (leased to Houston Co., and sub-leased to private parties).

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown.
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Known waterfowl nesting and feeding area, furbearers, fish spawning.
Socioeconomic: Site of Sandbar Marina, some camping on upstream area/recreation use.
Adjacent land use: Navigation channel, railroad, state highway.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 4
SITE: 8.30

Page 2 of 3

SITE: 8.30

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards):	2,500,000
Area at base (acres):	55
Height (feet):	30
Length (feet):	1,900
Width (feet):	1,250
Side slope (ratio):	4:1
Final elevation (feet):	695

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged:	20/40
Volume dredged per job (cubic yards):	50,900
Beneficial use demand (cubic yards):	645,000
Beneficial Use by:	MN DOT, Houston County, Hokah Township, Brownsville
Other cuts using sites:	3, 5

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 fine sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry):	X
Hydraulic (in slurry):	X

EROSION CONTROL NEEDED:

Riprap:	Yes
Revegetation:	None
Other:	None

Areas and features protected by erosion control: Downstream wing dams, riprap, and backwaters.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 8
CUT: 4
SITE: 8.30

Page 3 of 3

SITE: 8.30

SPECIAL CONDITIONS FOR SITE USE: Riprapping banks and periodic beneficial use removal necessary to make site acceptable.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	11	III & IV
	22	I
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	22	Existing Placement site
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Head of Raft Channel
 POOL: 8
 CUT: 4
 SITE: 8.30

Frequency: 50% /40 yrs
 Volume per job: 50,000 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE 20 inch	16 inch	12 inch	MECHANICAL		
				Backhoe 350 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$487,000*	\$429,000*	\$504,000*	\$185,000*	\$207,000*	\$231,000*
Berming Costs	10,000*	13,000*	12,000*	0	0	0
Diking Costs	9,000	8,000	8,000	0	0	0
Riprapping Costs	39,000*	39,000*	39,000*	39,000*	39,000*	39,000*
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	536,000	481,000	555,000	224,000	246,000	270,000
Average Annual Costs	268,000	240,500	277,500	112,000	123,000	135,000

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 5
SITE: 8.30

EXISTING CONDITIONS DESCRIPTION

SITE: 8.30

Page 1 of 3

CUT LOCATION: 688.7 - 689.4 (Brownsville)

PLACEMENT SITE LOCATION: RM 688.5

TYPE OF PLACEMENT SITE: Permanent ☒ Temporary ☐

ELEVATIONS AT SITE:

Site (1980): 665'
100-year flood: 639.25'
5-year flood: 634'
Flat pool: 630.55'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Partially

SITE CHARACTER:

% Upland: 40
% Wetland: 60
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Adjacent
Residence: Less than 200 ft.
Beneficial Use Site: 0'
Other: Side channel & wing dams immediately downstream.

VEGETATION CHARACTER:

SITE OWNER: FWS (leased to Houston Co. and sub-leased to private parties)

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Known waterfowl nesting and feeding area,
furbearers, fish spawning
Socioeconomic: Site of Sandbar Marina, some camping on upstream area/
recreation use.
Adjacent land use: Navigation channel, railroad, state highway.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 5
SITE: 8.30

Page 2 of 3

SITE: 8.30

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 2,500,000
Area at base (acres): 55
Height (feet): 30
Length (feet): 1,900
Width (feet): 1,250
Side slope (ratio): 4:1
Final elevation (feet): 695

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 22/40
Volume dredged per job (cubic yards): 29,800
Beneficial use demand (cubic yards): 645,000
Beneficial Use by: MN DOT, Houston County, Hokah Township, Brownsville
Other cuts using sites: 3, 4

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 95
Silt (%): 5
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: Yes
Revegetation: None
Other: None
Areas and features protected by erosion control: Downstream wing dams,
riprap, and backwaters.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 8
CUT: 5
SITE: 8.30

Page 3 of 3

SITE: 8.30

SPECIAL CONDITIONS FOR SITE USE: Riprapping banks and periodic beneficial
use removal necessary to make site acceptable.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	11	III & IV
	22	I
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	22	existing placement site
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Brownsville
POOL: 8
CUT: 5
SITE: 8.30

Frequency: 55%
 /40 yrs
 Volume per job: 29,800 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE					MECHANICAL
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$178,000*	\$211,000*	\$238,000*	\$115,000*	\$125,000*	\$149,000*
Berming Costs	5,000*	8,000*	9,000*	0	0	0
Diking Costs	8,000	7,000	6,000	0	0	0
Riprapping Costs	39,000*	39,000*	39,000*	39,000*	39,000*	39,000*
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	222,000	258,000	286,000	154,000	164,000	183,000
Average Annual Costs	122,100	141,900	157,300	84,700	90,200	100,700

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 6
SITE: 8.06

EXISTING CONDITIONS DESCRIPTION

SITE: 8.06

Page 1 of 3

CUT LOCATION: 689.9 - 690.8 (Above Brownsville)

PLACEMENT SITE LOCATION: RM 696

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 656'
100-year flood: 643.5'
5-year flood: 638'
Flat pool: 631'

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 1,000 ft.
Residence: Less than 1,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Area is on island and is old landfill site.

SITE OWNER: City of La Crosse

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Industrial development, sewage plant, marine

Adjacent land use: Marina, sewage plant, industrial park

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 6
SITE: 8.06

Page 2 of 3

SITE: 8.06

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 2,500,000
Area at base (acres): 44
Height (feet): 35
Length (feet): 2,300
Width (feet): 850
Side slope (ratio): 4:1
Final elevation (feet): 691

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 37,700
Beneficial use demand (cubic yards): 2,082,500
Beneficial Use by: LaCrosse County & City, Shelby, WI DOT
Other cuts using sites: 7,8,9,10; Pool 7; 2; Pool 9;4,5,6,7,8,9,10

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 medium to fine sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 8
CUT: 6
SITE: 8.06

Page 3 of 3

SITE: 8.06

SPECIAL CONDITIONS FOR SITE USE: Mechanical unloading required

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	44	existing fill
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Above Brownsville
POOL: 8
CUT: 6
SITE: 8.06

Frequency: 60%
 /40 yrs
 Volume per job: 37,700 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE	Backhoe			MECHANICAL	
		16 inch	12 inch	350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$417,000*	\$448,000*	\$472,000*	\$207,000*	\$228,000*	\$237,000*
Berming Costs (1)	6,000*	8,000*	10,000*	0	0	0
Diking Costs	8,000	7,000	7,000	0	0	0
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	423,000	456,000	482,000	207,000	228,000	237,000
Average Annual Costs	253,800	273,600	289,200	124,200	136,800	142,200

*GREAT recommended actions

(1) At Site 8.17.

DREDGED MATERIAL PLACEMENT SITE

POOL: 8

EXISTING CONDITIONS DESCRIPTION

CUT: 6

SITE: 8.17LB

SITE: 8.17 LB

Page 1 of 3

CUT LOCATION: 689.9 - 690.8 (Above Brownsville)

PLACEMENT SITE LOCATION: 690.3

TYPE OF PLACEMENT SITE: Permanent _____ Temporary X _____

ELEVATIONS AT SITE:

Site (1980): est. 655
100-year flood: 640.3
5-year flood: 634.4
Flat pool: 631.0

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Partially

SITE CHARACTER:

% Upland: 100 (old dredged material placement site)
% Wetland: (previously 100% Type 1 and 3 wetlands)
% Open water:

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: Adjacent
Residence: 2,500 ft.
Beneficial Use Site: 8,000 ft.
Other:

VEGETATION CHARACTER: Open sand, some willow and grasses

SITE OWNER: Federal

SPECIAL CONCERNS:

Endangered species habitat: Adjacent to mussel habitat
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Turtle nesting habitat
Socioeconomic: Dredged material containment site
Adjacent land use: Main channel, backwaters

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 6
SITE: 8.17 LB

Page 2 of 3

SITE: 8.17 LB

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 192,000
Area at base (acres): 8.5
Height (feet):
Length (feet): (containment site)
Width (feet):
Side slope (ratio):
Final elevation (feet): 655 (site periodically emptied)

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 37,700
Beneficial use demand (cubic yards): 0
Beneficial Use by: N/A
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100
Silt (%):
Other (%):
Contaminants:
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: Yes
Revegetation: Yes
Other:
Areas and features protected by erosion control: Adjacent and downstream
wetlands and downstream wingdams.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 8
CUT: 6
SITE: 8.17 LB

Page 3 of 3

SITE: 8.17 LB

SPECIAL CONDITIONS FOR SITE USE: Site must be periodically emptied and the perimeter protected from erosion.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	8.5	previous placement site
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Channel Maintenance Plan Costs

Cost figures were not calculated for this site because it is a temporary placement site. Material placed at this site must either be immediately removed to another site or removed to another site after material from several dredging jobs has been placed at the site. Cost for rehandling the material will vary according to demand for material, equipment available for removing the material, how much material must be removed during one rehandling operation, and where the material is ultimately placed.

Due to the number of variables affecting the cost of using this temporary site, calculation of cost estimates would not be meaningful for comparing with placement costs at other sites or with other methods.

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 7
SITE: 8.06

EXISTING CONDITIONS DESCRIPTION

SITE: 8.06

Page 1 of 3

CUT LOCATION: 691.4 - 691.8 (Picayne Island)

PLACEMENT SITE LOCATION: RM 696

TYPE OF PLACEMENT SITE: Permanent x Temporary _____

ELEVATIONS AT SITE:

Site (1980): 656'
100-year flood: 643.5'
5-year flood: 638
Flat pool: 631

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 1,000 ft.
Residence: Less than 1,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Area is on island and is old landfill site.

SITE OWNER: City of La Crosse

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Industrial development, sewage plant, marina

Adjacent land use: Navigation channel, marina, sewage plant, industrial park

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 7
SITE: 8.06

Page 2 of 3

SITE: 8.06

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 2,500,000
Area at base (acres): 44
Height (feet): 35
Length (feet): 2,300
Width (feet): 850
Side slope (ratio): 4:1
Final elevation (feet): 691

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 6/40
Volume dredged per job (cubic yards): 35,200
Beneficial use demand (cubic yards): 2,082,500
Beneficial Use by: La Crosse City & County, Shelby, WI DOT
Other cuts using sites: 6, 8, 9, 10, Pool 7;2;Pool 9; 4.5,7,8,9,10

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 7
SITE: 8.06

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

Page 3 of 3

SITE: 8.06

SPECIAL CONDITIONS FOR SITE USE: Mechanical Unloading Required

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	44	existing fill
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Picayane Island
POOL: 8
CUT: 7
SITE: 8.06

Frequency: 15%
/40 yrs
Volume per job: 35,200 cy

	TYPES OF DREDGES					
	PIPELINE	MECHANICAL				
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$341,000*	\$361,000*	\$346,000*	\$169,000*	\$174,000*	\$185,000*
Berming Costs	5,000*	6,000*	7,000*	0	0	0
Diking Costs	8,000	7,000	6,000	0	0	0
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	346,000	367,000	353,000	169,000	174,000	185,000
Average Annual Costs	51,900	55,100	53,000	25,400	26,100	27,800

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 8

EXISTING CONDITIONS DESCRIPTION

CUT: 8

SITE: 8.06

SITE: 8.06

Page 1 of 3

CUT LOCATION: 692.2 - 693.3 (Root River)

PLACEMENT SITE LOCATION: RM 696

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 656
100-year flood: 643.5'
5-year flood: 638
Flat pool: 631

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 1,000 ft.
Residence: Less than 1,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Area is on island and is old landfill site.

SITE OWNER: City of La Crosse

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Industrial development, sewage plant, marina

Adjacent land use: Marina, sewage plant, industrial park

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 8
SITE: 8.06

Page 2 of 3

SITE: 8.06

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 2,500,000
Area at base (acres): 44
Height (feet): 35
Length (feet): 2,300
Width (feet): 850
Side slope (ratio): 4:1
Final elevation (feet): 691

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 4/40
Volume dredged per job (cubic yards): 28,400
Beneficial use demand (cubic yards): 2,082,500
Beneficial Use by: La Crosse City and County, Shelby, WI DOT
Other cuts using sites: 6, 7, 9, 10; Pool 7: 2; Pool 9: 4, 5, 7, 8, 9, 10

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 8
CUT: 8
SITE: 8.06

Page 3 of 3

SITE: 8.06

SPECIAL CONDITIONS FOR SITE USE: Mechanical Unloading required

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	44	existing fill
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

DREDGED MATERIAL PLACEMENT SITE

POOL: 8

EXISTING CONDITIONS DESCRIPTION

CUT: 9

SITE: 8.06

SITE: 8.06

Page 1 of 3

CUT LOCATION: 694.3 - 695.0 (Sand Slough)

PLACEMENT SITE LOCATION: RM 696

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980):	656
100-year flood:	643.5'
5-year flood:	638
Flat pool:	631

FLOOD STAGE FACTORS:

Site within floodplain:	No
Site within floodway (effective flow area):	No
Site below ordinary high water mark:	No

SITE CHARACTER:

% Upland:	100
% Wetland:	0
% Open water:	0

DISTANCE FROM SITE TO:

Open Water:	Adjacent
Wetland:	1,000 ft.
Residence:	Less than 1,000'
Beneficial Use Site:	0'
Other:	

VEGETATION CHARACTER: Area is on island and is old landfill site.

SITE OWNER: City of La Crosse

SPECIAL CONCERNS:

Endangered species habitat:	None
Historical or archeological value:	Unknown
Other:	None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Industrial development, sewage plant, marina

Adjacent land use: Navigation channel, marina, sewage plant, industrial park

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 9
SITE: 8.06

SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

Page 3 of 3

SITE: 8.06

SPECIAL CONDITIONS FOR SITE USE: Mechanical Unloading required

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	44	existing fill
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Sand Slough
POOL: 8
CUT: 9
SITE: 8.06

Frequency: 20% /40 yrs
Volume per job: 21,400 cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$258,000*	\$293,000*	\$334,000*	\$101,000*	\$ 96,000*	\$117,000* \$128,000*
Berming Costs (1)	5,000*	7,000*	9,000*	0	0	0
Diking Costs	7,000	6,000	5,000	0	0	0
Riprapping Costs	0	0	0	0	0	0
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	263,000	300,000	343,000	101,000	96,000	117,000 128,000
Average Annual Costs	52,600	60,000	68,600	20,200	19,200	23,4000 25,600

*GREAT recommended actions

(1) At Site 8.15.

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 10
SITE: 8.28

EXISTING CONDITIONS DESCRIPTION

SITE: 8.28

Page 1 of 3

CUT LOCATION: 699.6 - 700.4 (Above and Below LaCrosse Railroad Bridge)

PLACEMENT SITE LOCATION: RM 700

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 635'
100-year flood: 646'
5-year flood: 640'
Flat pool: 631'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 0
% Wetland: 100
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 0'
Residence: Fill for residential development
Beneficial Use Site: 0'*
Other: *Numerous buildings exist on site and material has been requested
for fill around foundations; bridge crosses site.

VEGETATION CHARACTER: A previously used site, 4 acres of previously disturbed
Type 1 wetlands would be destroyed.

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Furbearers, passerine birds
Socioeconomic: Recreation, residential development
Adjacent land use: Residential, navigation channel, wetland

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 10
SITE: 8.28

Page 2 of 3

SITE: 8.28

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 33,000
Area at base (acres): 4
Height (feet): 5
Length (feet): 1,200
Width (feet): 150
Side slope (ratio): 4:1
Final elevation (feet): 650

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 10/40
Volume dredged per job (cubic yards): 28,000
Beneficial use demand (cubic yards): 626,000
Beneficial Use by:
Other cuts using sites: None LaCrescent, Houston Co. MN DOT

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: Yes
Other: None
Areas and features protected by erosion control: Adjacent wetlands and
downstream wing dams.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 8
CUT: 10
SITE: 8.28

Page 3 of 3

SITE: 8.28

SPECIAL CONDITIONS FOR SITE USE:

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	4	1
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	0	
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

La Crosse RR Bridge
POOL: 8
CUT: 10
SITE: 8.28

Frequency: 25%
 /40 yrs
 Volume per job: 28,000 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE				MECHANICAL	
		20 inch	16 inch	12 inch	Backhoe 350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$122,000*	\$129,000*	\$116,000*	\$102,000*	\$116,000*	\$124,000*
Berming Costs	4,000	5,000	5,000	0	0	0
Diking Costs	7,000	7,000	5,000	0	0	0
Riprapping Costs	256,000	256,000	256,000	256,000	256,000	256,000
Seasonal Removal	0	0	0	0	0	0
Special Construction (1)	5,000*	5,000*	5,000*	5,000*	5,000*	5,000*
Land Acquisition	13,000	13,000	13,000	13,000	13,000	13,000
Total of GREAT recommended Actions	127,000	134,000	121,000	107,000	121,000	129,000
Average Annual Costs	31,800	33,500	30,300	26,800	30,300	32,300

*GREAT recommended actions

(1) Placement of material as fill near structures.

DREDGED MATERIAL PLACEMENT SITE

POOL: 8
CUT: 10
SITE: 8.06

EXISTING CONDITIONS DESCRIPTION

SITE: 8.06

Page 1 of 3

CUT LOCATION: 699.3 - 700.4 (Above and Below LaCrosse Railroad Bridge)

PLACEMENT SITE LOCATION: RM 696

TYPE OF PLACEMENT SITE: Permanent X Temporary

ELEVATIONS AT SITE:

Site (1980): 656
100-year flood: 643.5'
5-year flood: 638
Flat pool: 631

FLOOD STAGE FACTORS:

Site within floodplain: No
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: 1,000 ft.
Residence: Less than 1,000'
Beneficial Use Site: 0'
Other:

VEGETATION CHARACTER: Area is on island and is old landfill site.

SITE OWNER: City of La Crosse

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Minimal

Socioeconomic: Industrial development, sewage plant, marina

Adjacent land use: Navigation channel, marina, sewage plant and industrial park adjacent.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 8
CUT: 10
SITE: 8.06

Page 2 of 3

SITE: 8.06

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 2,500,000
Area at base (acres): 44
Height (feet): 35
Length (feet): 2,300
Width (feet): 850
Side slope (ratio): 4:1
Final elevation (feet): 691

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 10 40
Volume dredged per job (cubic yards): 28,000
Beneficial use demand (cubic yards): 2,082,500
Beneficial Use by: La Crosse City & County, Sheiby, WI DOT
Other cuts using sites: 6, 7, 8, 9; Pool 7: 2, Pool 9: 4,5,7,8,9,10

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100 medium sand
Silt (%):
Other (%):
Contaminants: None
Contaminant Source:

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control: N/A

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS
(Continued from previous page)

POOL: 8
CUT: 10
SITE: 8.06

Page 3 of 3

SITE: 8.06

SPECIAL CONDITIONS FOR SITE USE: Mechanical Unloading Required

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	44	existing fill
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

La Crosse RR Bridge
POOL: 8
CUT: 10
SITE: 8.06

Frequency: 25%
 /40 yrs
 Volume per job: 28,000 cy

CHANNEL MAINTENANCE PLAN COSTS
 PER DREDGING JOB

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation (1)	\$276,000	\$287,000	\$271,000	\$124,000*	\$127,000*	\$154,000*	\$146,000*
Berming Costs	4,000	5,000	5,000	0	0	0	0
Diking Costs	7,000	7,000	5,000	0	0	0	0
Riprapping Costs	17,000	17,000	17,000	17,000	17,000	17,000	17,000
Seasonal Removal	0	0	0	0	0	0	0
Special Construction	0	0	0	0	0	0	0
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	-	-	-	124,000	127,000	154,000	146,000
Average Annual Costs	-	-	-	31,000	31,800	38,500	36,500

*GREAT recommended actions

*, (1) No Rehandling.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 1

Alternative Plan	Selected, RFFP	NED, MPFW/OG	EQ		
Placement Site No.	8.22	8.31	8.06		
Site Capacity (cy)	2,400,000	66,000	2,500,000		
Site Acreage	50	2.5	44		
Site Height (ft)	30	15	35		
Potential Beneficial use removal (cy)	468,500	-	2,082,500		
Conditions ¹ favoring use of site	21 2 4 5 28 29 30 11 32 33 35 16	1 6 7 8 9 11 33 16	21 2 23 4 5 27 10 11 12 33 35 16		
Conditions ¹ adverse to use of site	43 66 47 54	42 63 64 65 50 72 74 75	66 48 69 54		

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 2

Alternative Plan	Selected, RFFP	NED	EQ		
Placement Site No.	822	801	806		
Site Capacity (cy)	2,400,000	167,000	2,500,000		
Site Acreage	50	10	44		
Site Height (ft)	30	10	35		
Potential Beneficial use removal (cy)	468,500	468,500	2,082,500		
Conditions ¹ favoring use of site	21 2 4 5 28 29 30 11 32 33 35 16	1 4 5 26 27 28 29 11 32 33 14 15	21 2 23 4 5 7 10 12 33 35 16		
Conditions ¹ adverse to use of site	43 46 47 54	42 3 50 56	66 48 69 54		

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 3

Alternative Plan	Selected	NED, MPFW/OG	EQ	RFFP	
Placement Site No.	8.30	8.20	8.06	8.22	
Site Capacity (cy)	2,500,000	255,000	2,500,000	2,400,000	
Site Acreage	55	7	44	50	
Site Height (ft)	30	15	35	30	
Potential Beneficial use removal (cy)	645,000	-	2,082,500	468,500	
Conditions ¹ favoring use of site	1 4 5 7 29 11 33 15/35	1 26 7 8 9 11 33 54 16	21 2 23 4 5 27 10 11 12 33 35 16	21 2 4 5 30 11 32 33 35 16	
Conditions ¹ adverse to use of site	62 63 46 48 70 72 74 56	62 63 64 65 70 72 75	66 48 69 54	43 66 47 68 49 54	

¹ Code numbers in columns represent conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 4

Alternative Plan	Selected, EQ	NED, MPF W/OG	RFFP		
Placement Site No.	8.30	8.02	8.22		
Site Capacity (cy)	2,500,000	614,000	2,400,000		
Site Acreage	55	15	50		
Site Height (ft)	30	25	30		
Potential Beneficial use removal (cy)	645,000	-	468,500		
Conditions ¹ favoring use of site	1 4 5 7 29 11 33 15/35	1 4 5 6 7 11 29 11 33 15/35	21 2 4 5 30 11 32 33 35 16		
Conditions ¹ adverse to use of site	62 63 46 48 70 72 74 56	62 63 70 72 74 56	43 66 47 68 49 54		
<p>¹ Code numbers in columns represent conditions listed on pages ____.</p>					
58					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 5

Alternative Plan	EQ, RFFP	Selected, NED	MPFW/OG		
Placement Site No.	8.06	8.30	8.02		
Site Capacity (cy)	2,500,000	2,500,000	614,000		
Site Acreage	44	55	15		
Site Height (ft)	35	30	25		
Potential Beneficial use removal (cy)	2,082,500	645,000	-		
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35 16	1 4 5 26 7 8 29 11 33 15/35	1 4 5 6 7 8 29 11 33 15/35		
Conditions ¹ adverse to use of site	66 48 69 54	62 63 70 72 74 56	62 63 70 72 74 56		

¹ Code numbers in columns represent conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 6

Alternative Plan	Selected, EQ RFFP	NED, MPFW/OG			
Placement Site No.	8.06	8.17 ⁽²⁾			
Site Capacity (cy)	2,500,000	1,260,000			
Site Acreage	44	32			
Site Height (ft)	35	25			
Potential Beneficial use removal (cy)	2,082,000	-			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35 16	1 6 7 8 9 11 33 15 16			
Conditions ¹ adverse to use of site	66 48 69 54	62 43 64 65 70 72 74 75			
(2) Temporary site					
¹ Code numbers in columns represent conditions listed on pages ____.					
60					

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 7

Alternative Plan	Selected, NED EQ, RFFP	MPFW/OG			
Placement Site No.	8.06	8.16			
Site Capacity (cy)	2,500,000	226,000			
Site Acreage	44	9			
Site Height (ft)	35	15			
Potential Beneficial use removal (cy)	2,082,500	-			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35 16	1 26 7 8 9 11 32 16			
Conditions ¹ adverse to use of site	66 48 69 54	62 43 64 65 70 72 53 54 75			

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 8

Alternative Plan	Selected, NED EQ, RFFP	MPFW/OG			
Placement Site No.	8.06	8.27			
Site Capacity (cy)	2,500,000	2,500,000			
Site Acreage	44	44			
Site Height (ft)	35	35			
Potential Beneficial use removal (cy)	2,082,500	-			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35 16	1 6 7 8 9 11 16			
Conditions ¹ adverse to use of site	66 48 69 54	62 63 64 65 70 72 53 54 75			

¹ Code numbers in columns represent
conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 9

Alternative Plan	Selected, NED EQ, RFFP	NED, MPFW/OG			
Placement Site No.	8.06	8.15			
Site Capacity (cy)	2,500,000	277,000			
Site Acreage	44	11.5			
Site Height (ft)	35	15			
Potential Beneficial use removal (cy)	2,086,000	-			
Conditions ¹ favoring use of site	21 2 23 4 5 27 10 11 12 33 35 16	1 26 7 8 9 11 16			
Conditions ¹ adverse to use of site	66 48 69 54	62 63 64 65 70 72 53 54 75			

¹ Code numbers in columns represent conditions listed on pages ____.

COMPARISON OF ALTERNATIVE PLAN SITES

Pool 8 Cut 10

Alternative Plan	Selected, NED	Selected, NED EQ. RFFP	MPFW/OG		
Placement Site No.	8.28	8.06	8.07		
Site Capacity (cy)	50,000	2,500,000	350,000		
Site Acreage	15	44	15		
Site Height (ft)	15	35	15		
Potential Beneficial use removal (cy)	626,000	2,082,500	-		
Conditions ¹ favoring use of site	21 4 5 26 27 28 29 30 11 32 15 16*	21 2 23 4 5 27 10 11 12 33 35 16	4 28 29 30 11 32 35 16		
Conditions ¹ adverse to use of site	62 43 53	66 48 69 54	41 42 63 65 46 47 53 74		
<p>*Site will be used till local residents have sufficient fill for development.</p> <p>¹ Code numbers in columns represent conditions listed on pages ____.</p>					

Key to Conditions Used in Site Comparisons

1. Recreation enhancement
2. Remove from floodplain
3. Fish and wildlife enhancement
4. Beneficial use identified
5. Existing road access
6. Adjacent to cut
7. No land acquisition required
8. Provides flexibility of equipment
9. Least cost to dredge
10. No erosion potential
11. No special construction required
12. No diking of berming
13. No water quality concerns
14. Aesthetic enhancement
15. Beneficial use on the site
16. Sufficient capacity on the site


21. No adverse impacts on recreation use
22. Potential for removal from floodplain
23. No adverse fish and wildlife impacts
24. Potential for identifying a beneficial user
25. Road access can be constructed
26. Within $\frac{1}{2}$ mile of cut (easy reach of cutterhead dredges)
27. No apparent problem in acquiring land or easement
28. Slight limitation on equipment choice
29. Less costly than dredging to most other sites
30. Some erosion potential
31. (Unused)
32. Berming required
33. No water quality concern expected
34. (Unused)
35. Know of area where material can be put to beneficial use
36. Sufficient capacity site but less impact if beneficial use demand is developed

41. Some adverse impacts on recreation use
42. In floodplain - no effect on flood flows
43. Some adverse impacts on fish and wildlife
44. No suspected beneficial user can be identified
45. Poor access to the site
46. Within 2 miles of cut (barely within reach of hydraulic dredges)
47. Land or easement acquisition required
48. Equipment choice limited to just a few options
49. More costly than dredging to most of the other sites
50. Severe erosion potential
51. (Unused)
52. Diking required
53. Suspected water quality concerns
54. Some aesthetic problems
55. Potential market for beneficial use suspected but not identified
56. Sufficient capacity on site with removal by identified users


61. Severe adverse impacts on recreation use
62. Placement would cause suspected constriction on flood flows
63. Severe adverse impacts on fish and wildlife
64. No potential for identifying beneficial user
65. No access to the site
66. Beyond 2 miles from cut (cannot be reached directly by cutterhead dredges)
67. Land or easement acquisition required but does not seem likely
68. Severe restrictions on choice of equipment
69. Most costly to dredge
70. Severe erosion potential with severe consequences if failure occurs
71. Special construction required to use the site
72. Berming or diking required with severe consequences if failure occurs
73. Known water quality concerns
74. Adverse aesthetic impacts
75. No potential market for beneficial use
76. Sufficient capacity on site only if potential beneficial use, not now identified, develops

LEGEND

RECOMMENDED CHANNEL MAINTENANCE PLAN

- 5 — Dredge cut number
- Location of dredge cut
-  Recommended placement site
- 2 0 6 T — Site number
- 3,4,5 — S = Special conditions on use
T = Temporary use site
- Dredge cuts for which site is used
- Parentheses if site is used for placement of material from a cut in another pool

ALTERNATIVE MATERIAL PLACEMENT PLANS

-  Alternative placement site
- 4.09 — Site number

POOL 8				
DREDGE CUT	ALTERNATIVE PLACEMENT PLANS			
	MPFW/OG	NED	EQ	RFFP
1	8.31	8.31	8.06	8.22
2	8.01	8.01	8.06	8.22
3	8.20	8.20	8.06	8.22
4	8.02	8.02	8.30	8.22
5	8.02	8.30	8.06	8.06
6	8.17	8.17	8.06	8.06
7	8.16	8.06	8.06	8.06
8	8.27	8.06	8.06	8.06
9	8.15	8.15/8.06	8.06	8.06
10	8.07	8.28/8.06	8.06	8.06

M = Most probable future without GREAT
 N = National economic development
 E = Environmental quality
 R = Removal from floodplain

SCALE: 1" = 4,000'







--- FLOODWAY DESIGNATED BY LOCAL ORDINANCE



GREAT RIVER ENVIRONMENTAL ACTION
UPPER MISSISSIPPI RIVER
(POOL 8(L)-MILE 679 TO MILE 692)

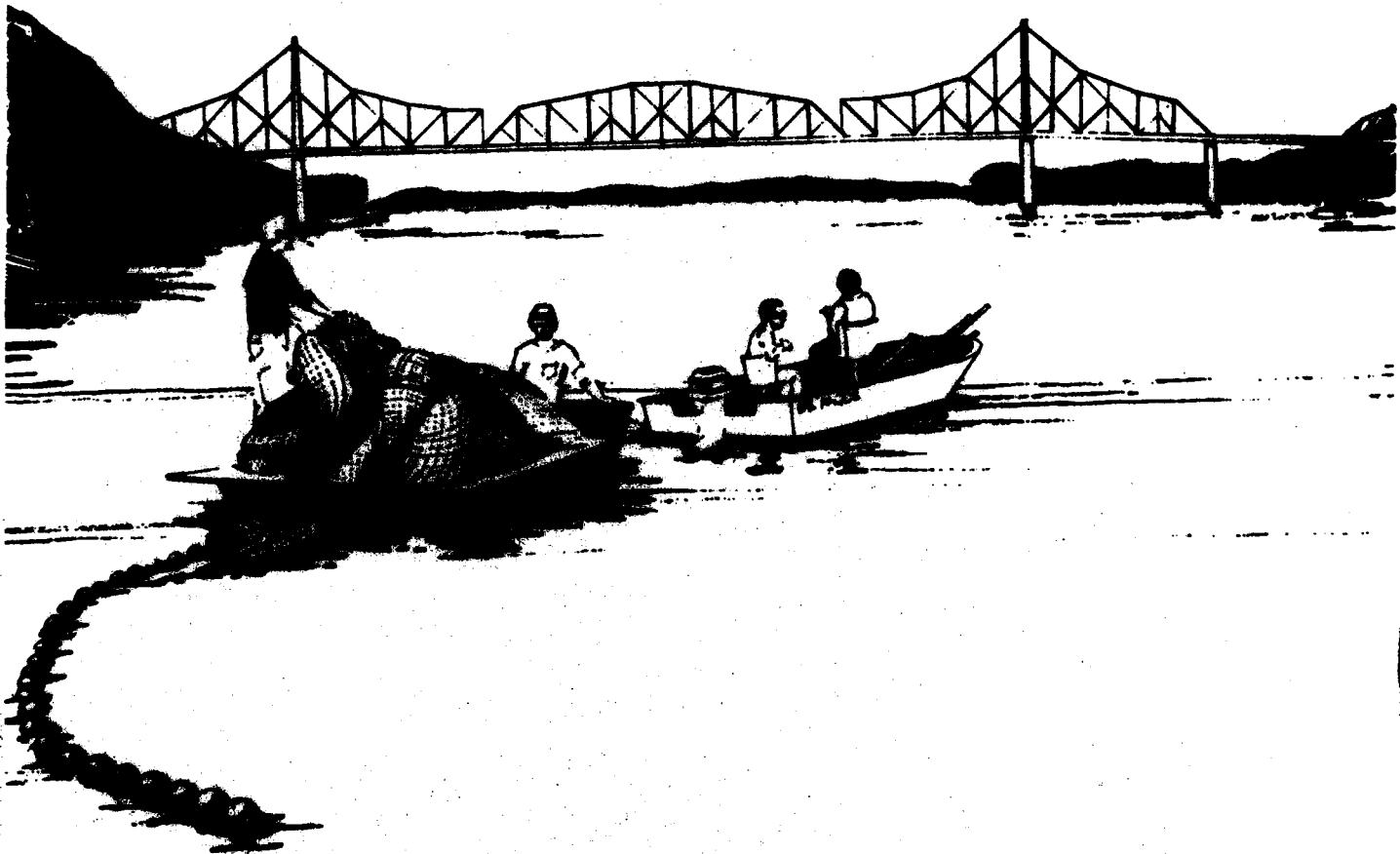
GENOA

L/D NO. 8

RENO OTIONS

RIVER ENVIRONMENTAL ACTION TEAM
UPPER MISSISSIPPI RIVER
(POOL 8(L)-MILE 679 TO MILE 692)

3



POOL 9

CHANNEL MAINTENANCE PLAN SUMMARY

FOOL 9

Dredge Cut	MPFNG CY @ 1985-0225	Selected Site	NED Site	BQ Site	MPFP Site	MPFNG CY @ 1985-2025	Temporary Site
1. Above Crooked Slough	52,000	9.47/9.41	9.34	9.41	9.41	56,500	-
2. Above Archafalaya	49,500	9.47/9.26	9.47	9.47/9.42	9.42	124,000	-
3. Lanning Upper Light	469,000	9.26/9.47/ 9.03/9.28*	9.04	9.03/9.47/ 8.06	9.41	1,174,500	9.17
4. Indian Camp Light	517,000	9.07/8.06	9.18	9.08/8.06	9.23	568,500	9.18
5. DeSoto	101,500	9.07/8.06	9.36	9.08	9.23	110,500	-
6. Head of Battle Island	363,500	9.11/9.33	9.33	8.06	9.24	400,000	-
7. Below Twin Island	12,000	9.15/9.11/ 9.33/8.06	9.20	9.15	9.24	13,500	-
8. Twin Island	362,000	9.15/9.11/ 9.33/8.06	9.38	8.06	9.42	396,000	9.20
9. Island 126	302,000	9.15/9.11/ 9.33/8.06	9.21/9.39	9.15/8.06	9.43	462,000	9.21
10. Lower Approach to L/D 8	93,500	9.15/9.11/ 9.33/8.06	9.39	8.06	9.43	99,500	-
	2,322,000					3,405,000	

SELECTED PLAN SUMMARY

Total Volume Dredged (cy) - 2,322,000
 Beneficial Use (cy) Estimate
 from Selected Volume - 860,200
 Total Area (acres) - 112

*Site 9.24 is not endorsed for use
 by the GREAT I.

No. of sites with:
 Recreation Enhancement - 5
 Cultural Resources Impacts - 0
 Wetlands Affected:
 Types 1, 2 (acres) - 25
 Types 3, 4, 5 (acres) - 43

Table 2-
Pool 9 Dredging Volumes

Item	Cut 1		Cut 2		Cut 3		Cut 4		Cut 5	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Above Crooked Slough		Above Archafalaga		Lansing Upper Light		Indian Camp Light		De Soto	
1955 - 1974 average annual dredging volume	2,000	2,000	4,400	4,400	41,700	41,700	20,200	20,200	3,900	3,900
Bend width changes (percent)	-	-	-56	-	-56	-	-	-	-	-
Adjusted average annual volume	2,000	2,000	1,900	4,400	18,300	41,700	20,200	20,200	3,900	3,900
Change for 1986 - 2000 (percent)	-34	-19	-34	-19	-34	-19	-34	-19	-34	-19
Adjusted average annual volume	1,300	1,600	1,300	3,600	12,100	33,800	13,300	16,400	2,600	3,200
Total volume dredged, 1986 - 2000	19,500	20,000	19,500	54,000	181,500	507,000	199,500	246,000	39,000	48,000
Change for 2001 - 2025 (percent)	-37	-36	-37	-36	-37	-36	-37	-36	-37	-36
Adjusted average annual volume	1,300	1,300	1,200	2,800	11,500	26,700	12,700	12,900	2,500	2,500
Total volume dredged, 2001 - 2025	32,500	32,500	30,000	70,000	287,500	667,500	317,500	322,500	62,500	62,500
Total volume dredged, 1986 - 2025	52,000	56,500	49,500	124,000	469,000	1,174,500	517,000	568,500	101,500	110,500
Frequency of dredging (percent)	5	5	5	5	60	60	25	25	5	5
Expected number of dredging jobs (1986 - 2025)	2	2	2	2	24	24	10	10	2	2
Average dredging volume per job	26,000	28,200	24,800	62,000	19,500	48,900	51,700	56,800	50,800	55,200

Note: All volumes in Cubic Yards

Table 2-- (cont.)
Pool 9 Dredging Volumes

Item	Cut 6		Cut 7		Cut 8		Cut 9		Cut 10	
	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT	With GREAT	Without GREAT
Cut Name	Head of Battle Island		Below Twin Island		Twin Island		Island 126		Lower Approach L/D 8	
1955 - 1974 average annual dredging volume	14,200	14,200	500	500	14,100	14,100	16,400	16,400	3,100	3,100
Bend width changes (percent)	-	-	-	-	-	-	-28	-	-	-
Adjusted average annual volume	14,200	14,200	500	500	14,100	14,100	11,800	16,400	3,100	3,100
Change for 1986 - 2000 (percent)	-34	-19	-34	-19	-34	-19	-34	-19	-28 ⁽¹⁾	-9 ⁽¹⁾
Adjusted average annual volume	9,400	11,500	300	400	9,300	11,400	7,800	13,300	2,400	2,800
Total volume dredged, 1986 - 2000	141,000	172,500	4,500	6,000	139,500	171,000	117,000	199,500	36,000	42,000
Change for 2001 - 2025 (percent)	-37	-36	-37	-36	-37	-36	-37	-36	-27 ⁽¹⁾	-26 ⁽¹⁾
Adjusted average annual volume	8,900	9,100	300	300	8,900	9,000	7,400	10,500	2,300	2,300
Total volume dredged, 2001 - 2025	222,500	227,500	7,500	7,500	225,000	225,000	185,000	262,500	57,500	57,500
Total volume dredged, 1986 - 2025	363,500	400,000	12,000	13,500	362,000	396,000	302,000	462,000	93,500	99,500
Frequency of dredging (percent)	30	30	5	5	45	45	25	25	10	10
Expected number of dredging jobs (1986 - 2025)	12	12	2	2	18	18	10	10	4	4
Average dredging volume per job	30,300	33,300	6,000	6,800	20,100	22,000	30,200	46,200	23,400	24,900

Note: All volumes in Cubic Yards
(1) Cut in approach to rigid structure

DREDGED MATERIAL PLACEMENT SITE

EXISTING CONDITIONS DESCRIPTION

POOL: 9
CUT: 1
SITE: 9.47

SITE: 9.47

Page 1 of 3

CUT LOCATION: 653.6 (Above Crooked Slough)

PLACEMENT SITE LOCATION: 653.6 - 654.6

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 629'
100-year flood: 633.5'
5-year flood: 626'
Flat pool: 619.8'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: No

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: None in immediate area
Residence: More than 1,000 ft.
Beneficial Use Site: 0
Other: Site is adjacent to power plant.

VEGETATION CHARACTER: Industrial development has already taken place at site,
scrub brush vegetation.

SITE OWNER: Private

SPECIAL CONCERNS:

Endangered species habitat: Higgin's Eye mussel found adjacent to site
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Large clam beds located adjacent to site.
Waterfowl nesting, fish feeding adjacent.
Socioeconomic: Power plant property.
Adjacent land use: Navigation channel, rail line, state highway, electrical
generating plant.

REMOVED THIS PLACEMENT PLANNED

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 9
CUT: 1
SITE: 9.47

Page 2 of 3

SITE: 9.47

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 17,000
Area at base (acres): 1
Height (feet): 10
Length (feet): 300
Width (feet): 200
Side slope (ratio): 4:1
Final elevation (feet): 639

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 26,000
Beneficial use demand (cubic yards): 126,000
Beneficial Use by: Allamakee County
Other cuts using sites: Pool 9; 1,2,3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 91
Silt (%): 9
Other (%): 0
Contaminants: Minor
Contaminant Source: N/A

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control:

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 9

CUT: 1

SITE: 9.47

Page 3 of 3

SITE: 9.47

SPECIAL CONDITIONS FOR SITE USE: Material must be removed during placement operation to have sufficient capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	0
Wetlands altered:	0	0
Open water filled:	0	0
Upland altered:	1	0
Endangered Species habitat lost:	None	None
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Above Crooked Slough

POOL: 9

CUT: 1

SITE: 9.47

Frequency: 5%

2/40 yrs

Volume per job: 26,000cy

TYPES OF DREDGES

	PIPELINE 20 inch	MECHANICAL			
		16 inch	12 inch	Backhoe 350 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$316,000*	\$343,000*	\$340,000*	\$138,000*	\$147,000* \$155,000* \$172,000*
Berming Costs	5,000	6,000	8,000	-	-
Diking Costs	7,000	6,000	5,000	-	-
Riprapping Costs	21,000	21,000	21,000	21,000	21,000 21,000 21,000
Seasonal Removal	0	0	0	0	0 0 0
Special Construction	0	0	0	0	0 0 0
Land Acquisition	1,000*	1,000*	1,000*	1,000*	1,000* 1,000* 1,000*
Total of GREAT recommended Actions	317,000	344,000	341,000	140,000	148,000 156,000 173,000
Average Annual Costs	15,900	17,200	17,100	7,000	7,400 7,800 8,700

*GREAT recommended actions

DREDGED MATERIAL PLACEMENT SITE

POOL: 9

EXISTING CONDITIONS DESCRIPTION

CUT: 1

SITE: 9.41

SITE: 9.41

Page 1 of 3

CUT LOCATION: 653.6 - 654.6 (Above Crooked Slough)

PLACEMENT SITE LOCATION: 652.7

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): approx. 627
100-year flood: 633
5-year flood: 625.5
Flat pool: 620.0

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: ?

SITE CHARACTER:

% Upland: 50
% Wetland: 50
% Open water:

DISTANCE FROM SITE TO:

Open Water: 200'
Wetland: 0
Residence: 3,000'
Beneficial Use Site: 0
Other:

VEGETATION CHARACTER: Willow, maple, scrub

SITE OWNER: ?

SPECIAL CONCERNS:

Endangered species habitat: None
Historical or archeological value: Unknown
Other:

EXISTING USE OF SITE:

Fish and Wildlife: Furbearers, fish spawning, passerine birds
Socioeconomic: none
Adjacent land use: Railroad, state highway, river bluff.

DREDGED MATERIAL PLACEMENT SITE
SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 9
CUT: 1
SITE: 9.41

Page 2 of 3

SITE: 9.41

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 135,000
Area at base (acres): 8.5
Height (feet): 10
Length (feet): Triangle 500 X 600 X 850
Width (feet): "
Side slope (ratio): --
Final elevation (feet): Approx. 637

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 26,000
Beneficial use demand (cubic yards): 332,000
Beneficial Use by: Seneca Township, Crawford County
Other cuts using sites: None

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 91
Silt (%): 9
Other (%):
Contaminants: Minor
Contaminant Source: -

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): Yes
Hydraulic (in slurry): No

EROSION CONTROL NEEDED:

Riprap: No
Revegetation: Yes
Other:
Areas and features protected by erosion control: Adjacent backwaters
in river.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 9

CUT: 1

SITE: 9.41

Page 3 of 3

SITE: 9.41

SPECIAL CONDITIONS FOR SITE USE: Will need rehandling at outlet of Coulee and probably will require small hydraulic dredge for rehandling.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	4	1 & 3
Wetlands altered:	0	0
Open water filled:	0	0
Upland altered:	4.5	?
Endangered Species habitat lost:	0	
Side channels blocked:	0	
Other:		

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Above Crooked Slough

POOL: 9
CUT: 1
SITE: 9.41

Frequency: 5%
2/40 yrs
Volume per job: 26,000 cy

**CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB**

	TYPES OF DREDGES						
	PIPELINE			MECHANICAL			
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	350 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$305,000*	\$338,000*	\$336,000*	\$128,000*	\$126,000*	\$142,000*	\$149,000*
Berming Costs	5,000	6,000	8,000	0	0	0	0
Diking Costs	7,000	6,000	5,000	0	0	0	0
Riprapping Costs	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Seasonal Removal	0	0	0	0	0	0	0
Special Construction (1)	15,000*	15,000*	12,000*	2,000*	2,000*	2,000*	2,000*
Land Acquisition	0	0	0	0	0	0	0
Total of GREAT recommended Actions	320,000	353,000	348,000	130,000	128,000	144,000	151,000
Average Annual Costs	16,000	17,700	17,400	6,500	6,400	7,200	7,600

*GREAT recommended actions

(1) Crossing railroad tracks.

DREDGED MATERIAL PLACEMENT SITE

POOL: 9
CUT: 2
SITE: 9.47

EXISTING CONDITIONS DESCRIPTION

SITE: 9.47

Page 1 of 3

CUT LOCATION: 660.3 - 660.8 (Above Atchafalaya)

PLACEMENT SITE LOCATION: 659.8

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): 629
100-year flood: 633.5'
5-year flood: 626'
Flat pool: 619.8'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): No
Site below ordinary high water mark: No
Site is in flood fringe.

SITE CHARACTER:

% Upland: 100
% Wetland: 0
% Open water: 0

DISTANCE FROM SITE TO:

Open Water: Adjacent
Wetland: None in immediate area.
Residence: More than 1,000'
Beneficial Use Site: 0'
Other: Site is adjacent to power plant.

VEGETATION CHARACTER: Industrial development has already taken place at site, scrub brush vegetation.

SITE OWNER: Private.

SPECIAL CONCERNS:

Endangered species habitat: Higgins Eye mussel found adjacent to sites.
Historical or archeological value: Unknown.
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Large clam beds located adjacent to site, waterfowl nesting, fish feeding adjacent.
Socioeconomic: Power plant property.
Adjacent land use: Navigation channel, rail line, state highway, electrical/generating plant.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 9
CUT: 2
SITE: 9.47

Page 2 of 3

SITE: 9.47

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): 17,000
Area at base (acres): 1
Height (feet): 10
Length (feet): 300
Width (feet): 200
Side slope (ratio): 4:1
Final elevation (feet): 639

ESTIMATED SITE USE SCHEDULE:

Frequency cut is dredged: 2/40
Volume dredged per job (cubic yards): 24,800
Beneficial use demand (cubic yards): 126,000
Beneficial Use by: Alamakee County
Other cuts using sites: 1, 2, 3

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 100
Silt (%):
Other (%):
Contaminants: Minor
Contaminant Source: -

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: None
Revegetation: None
Other: None
Areas and features protected by erosion control:

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 9
CUT: 2
SITE: 9.47

Page 3 of 3

SITE: 9.47

SPECIAL CONDITIONS FOR SITE USE: Material must be removed during placement operation to have sufficient capacity.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	0	
Open water filled:	0	
Upland altered:	1	industrial developed
Endangered Species habitat lost:	None	
Side channels blocked:	0	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

DREDGED MATERIAL PLACEMENT SITE

POOL: 9
CUT: 2
SITE: 9.26

EXISTING CONDITIONS DESCRIPTION

SITE: 9.26

Page 1 of 3

CUT LOCATION: 660.3 - 660.8 (Above Atchafalaya)

PLACEMENT SITE LOCATION: RM 664

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): Sumerged
100-year flood: 634'
5-year flood: 627'
Flat pool: 620'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Yes

SITE CHARACTER:

% Upland: 0
% Wetland:
% Open water: 100

DISTANCE FROM SITE TO:

Open Water: 0'
Wetland:
Residence: Less than 200'
Beneficial Use Site: 0'
Other: Site is adjacent to marina.

VEGETATION CHARACTER:

SITE OWNER: Federal.

SPECIAL CONCERNS:

Endangered species habitat: Maybe mussel bed area.
Historical or archeological value: Unknown
Other: None.

EXISTING USE OF SITE:

Fish and Wildlife: Fish spawning ground, migratory waterfowl feeding ground, furbearers, mussels.
Socioeconomic: None
Adjacent land use: Residential, navigation channel, marina, rail line, state highway.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

(Continued from previous page)

POOL: 9

CUT: 2

SITE: 9.26

Page 3 of 3

SITE: 9.26

SPECIAL CONDITIONS FOR SITE USE: Any excess material not needed for marina development will be trucked to other beneficial use site from 9.26.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	None	
Open water filled:	22	
Upland altered:	None	
Endangered Species habitat lost:	May be	habitat for Higgin's Eye mussel
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☐
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

CHANNEL MAINTENANCE PLAN COSTS
PER DREDGING JOB

Above Atchafalaya

POOL: 9

CUT: 2

SITE: 9.26

Frequency: 5X

2/40 yrs

Volume per job: 24,800 cy

	TYPES OF DREDGES					
	PIPELINE			MECHANICAL		
	20 inch	16 inch	12 inch	Backhoe 350 H.P.	700 H.P.	Clamshell 700 H.P.
Basic Dredging Operation	\$289,000*	\$322,000*	\$321,000*	\$ 122,000*	\$120,000*	\$140,000*
Berming Costs	5,000	7,000	8,000	0	0	0
Diking Costs	7,000	6,000	5,000	0	0	0
Riprapping Costs	55,000	55,000	55,000	55,000	55,000	55,000
Seasonal Removal	0	0	0	0	0	0
Special Construction	6,000 ^{(1)*}	6,000 ^{(1)*}	6,000 ^{(1)*}	6,000 ^{(1)*}	6,000 ^{(1)*}	6,000 ^{(1)*}
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	295,000	328,000	327,000	128,000	141,000	146,000
Average Annual Costs	14,800	16,400	16,400	6,400	7,100	7,300

*GREAT recommended actions

(1) Unusual placement of material off of barges onto the site, which will be partially in water placement, decreases the productivity of the physical plant.

DREDGED MATERIAL PLACEMENT SITE

POOL: 9

EXISTING CONDITIONS DESCRIPTION

CUT: 3

SITE: 9.26

SITE: 9.26

Page 1 of 3

CUT LOCATION: 663.8 - 665.0 (Lansing Upper Light)

PLACEMENT SITE LOCATION: RM 664

TYPE OF PLACEMENT SITE: Permanent X Temporary _____

ELEVATIONS AT SITE:

Site (1980): Submerged
100-year flood: 634'
5-year flood: 627'
Flat pool: 620'

FLOOD STAGE FACTORS:

Site within floodplain: Yes
Site within floodway (effective flow area): Yes
Site below ordinary high water mark: Yes

SITE CHARACTER:

% Upland: 0
% Wetland:
% Open water: 100

DISTANCE FROM SITE TO:

Open Water: 0'
Wetland: 0'
Residence: Less than 200'
Beneficial Use Site: 0'
Other: Site is adjacent to marina.

VEGETATION CHARACTER:

SITE OWNER: Federal.

SPECIAL CONCERNS:

Endangered species habitat: May be mussel bed.
Historical or archeological value: Unknown
Other: None

EXISTING USE OF SITE:

Fish and Wildlife: Fish spawning ground, migratory waterfowl feeding ground, furbearers, mussels.
Socioeconomic: None.

Adjacent land use: Residential, navigation channel, marina, rail line, state highway.

DREDGED MATERIAL PLACEMENT SITE

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

POOL: 9
CUT: 3
SITE: 9.26

Page 2 of 3

SITE: 9.26

MAXIMUM SITE DEVELOPMENT DIMENSIONS:

Volume capacity (cubic yards): Unknown*
Area at base (acres): 22
Height (feet): Unknown
Length (feet): 1,400
Width (feet): 700
Side slope (ratio): 4:1
Final elevation (feet): Unknown

*(Size of area is sufficient to accommodate volumes-679,000cy. Area will be
ESTIMATED SITE USE SCHEDULE: designed according to marina needs).

Frequency cut is dredged: 24/40
Volume dredged per job (cubic yards): 19,500
Beneficial use demand (cubic yards): 821,000
Beneficial Use by: Lansing, Allamakee Co. at site recreational development
Other cuts using sites: 2, 1

DREDGED MATERIAL CHARACTERISTICS:

Sand (%): 99
Silt (%): -
Other (%): 1 (Gravel)
Contaminants: Minor
Contaminant Source: -

DREDGED MATERIAL PLACEMENT METHODS:

Mechanical (semidry): X
Hydraulic (in slurry): X

EROSION CONTROL NEEDED:

Riprap: Yes
Revegetation: None
Other: None

Areas and features protected by erosion control: Possible mussel bed
downstream and downstream wing dams and riprap.

DREDGED MATERIAL PLACEMENT SITE

POOL: 9

CUT: 3

SITE DEVELOPMENT DESCRIPTION AND IMPACTS

SITE: 9.26

(Continued from previous page)

Page 3 of 3

SITE: 9.26

SPECIAL CONDITIONS FOR SITE USE: Excess material not needed for marina development will be trucked to other beneficial use sites from 9.26.

WILDLIFE HABITAT IMPACTS:

	<u>Acres</u>	<u>Type</u>
Wetlands filled:	0	
Wetlands altered:	None	
Open water filled:	22	
Upland altered:	None	
Endangered Species habitat lost:	May be habitat for Higgin's Eye mussel	
Side channels blocked:	None	
Other:	None	

HISTORICAL/ARCHEOLOGICAL IMPACTS:

Historical/Archeological sites known to exist: ☒
Historical/Archeological sites were not found: ☐
Historical/Archeological survey not made: ☒

Lansing Upper Light

POOL: 9

CUT: 3

SITE: 9.26

Frequency: 60 %

24 /40 yrs

Volume per job: 19,500 cy

CHANNEL MAINTENANCE PLAN COSTS PER DREDGING JOB

	TYPES OF DREDGES					
	PIPELINE 20 inch	16 inch	12 inch	MECHANICAL		
				Backhoe 350 H.P.	700 H.P.	Clamshell 350 H.P. 700 H.P.
Basic Dredging Operation	\$ 231,000(1)*	\$184,000(1)*	\$ 203,000(1)*	\$ 83,000*	\$ 92,000*	\$107,000*
Berming Costs	7,000	6,000	7,000	0	0	0
Diking Costs	8,000	6,000	4,000	0	0	0
Riprapping Costs	55,000	55,000	55,000	55,000	55,000	55,000
Seasonal Removal	0	0	0	0	0	0
Special Construction	0	6,000(2)*	6,000(2)*	6,000(2)*	6,000(2)*	6,000(2)*
Land Acquisition	0	0	0	0	0	0
Total of GREAT recommended Actions	231,000	190,000	209,000	89,000	98,000	113,000
Average Annual Costs	138,600	114,000	125,400	53,400	58,800	67,800

*GREAT recommended actions

- (1) Reduced an arbitrary 30% because the majority of the dredging occurs in the lower portion of the cut, i.e. nearest the disposal site.
- (2) Unusual placement of material off of barges onto the site, which will be partially in water placement, decreases the productivity of the physical plant.